

ARGUMENTS/REMARKS

Claims 114-130 are pending. Claims 114, 120, 122, 124-125, 127-128, and 130 have been amended.

The Examiner objected to claims 120, 124-125, and 127-128 based upon the phrasing of the claim preamble. These claims have now been amended in the manner suggested by the Examiner.

The Examiner rejected claims 122, and 130 as indefinite under 35 U.S.C. §112 ¶2. Claims 122 and 130 have been amended to provide antecedent basis for the claim terms cited by the Examiner.

Claim 119 was rejected as indefinite under 35 U.S.C. §112 ¶2 based upon purported uncertainty regarding the meaning of the term "non-permanent sensors". In support of claim 119, the Examiner is directed to the following passage from the application:

field mounted device 105 may be coupled to a laptop client computer 112 that is in turn in communication with internet 109. This latter configuration is particularly useful where a particular field mounted device is not permanently linked to the process via SCADA system 129, but is instead transported to process 121 and temporarily installed by technician 111 for specialized diagnostic or control purposes. (Emphasis added; page 7, lines 24-29)

It is respectfully asserted that the above quote evidences not only the definiteness of claim 119 under 35 U.S.C. §112, ¶2, but also the enablement and written support for this claim under 35 U.S.C. §112, ¶1.

Applicants traversal of rejection of other pending claims under 35 U.S.C. §112, ¶1, is set forth in detail below.

Claim Rejections Under 35 U.S.C. §112, ¶1

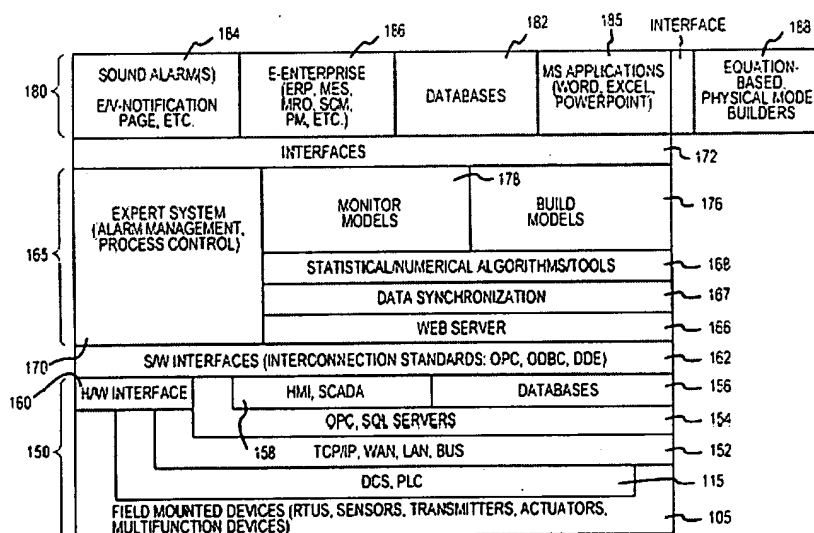
The Examiner has rejected the pending claims as not enabled or supported by the written disclosure. These claim rejections are overcome as follows.

Sole pending independent claim 114, as amended by the instant response, is reproduced below for the Examiner's reference:

114. A monitoring system comprising:
a chemical sensor;
a biological sensor;
a radiation sensor;
a network configured to connect said chemical, biological, and radiation sensors;
a layer configured to assimilate sensor data from said chemical, biological, and radiation sensors to form synchronized data; and
a preprocessing module for preprocessing said synchronized data for further processing by a processing manager.

The Examiner indicated a perceived lack of enablement and support regarding the former "network module" element of claim 114. Claim 114 has now been amended delete the term "module", such that the chemical, biological, and radiation sensors are connected by a network. Support for this amendment may be found throughout the specification as originally filed, at least at Figures 1-1A and generally at page 6, lines 6 - page 7, line 23.

The Examiner also indicated a perceived lack of enablement and support regarding the former "integration module" and "integrated data" elements of claim 114. Claim 114 has now been amended to replace these terms with the phrase "layer configured to assimilate sensor data . . . to form synchronized data". Support for this amendment is present in the specification as originally filed, at least in connection with Figure 1A and accompanying text reproduced below:



The lowest layer of portion 150 represents field mounted devices 105 such as RTU's, sensors, actuators, and multifunctional devices in direct contact with the process.

* * *

Field mounted devices 105, logic devices 115, communication structures 152, and server 154 are each in communication with hardware interface 160 that is in turn in communication with software interface 162. Software interface 162 links bottom portion 150 of Fig. 1A with middle portion 165 of Fig. 1A.

Middle portion 165 represents process control and monitoring processes in accordance with embodiments of the present invention.

* * *

In the next layer 167, data received by server 166 is synchronized to permit orderly assimilation for monitoring and control purposes. (Emphasis added; page 9, lines 5-20)

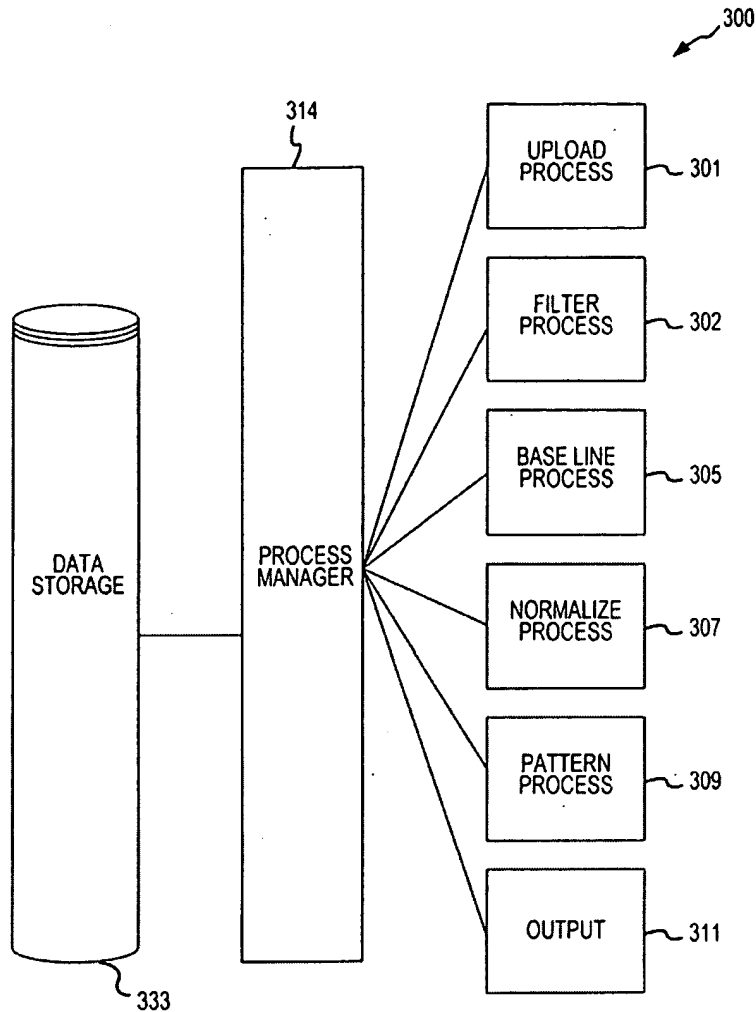
The Examiner also indicated a perceived lack of enablement and support regarding the "preprocessing module" and "processing module" elements of independent claim 114. As explicitly acknowledged by the Examiner in the latest office action, the written description includes ample description of various preprocessing techniques which can be employed. (See, e.g. page 27, lines 4-12, and page 78, Table 7). Moreover, the instant specification also specifically indicates that these processing techniques may be performed by a modular element:

It is expected that the following will be the subject of modules:

1. Pre-Processing Techniques; (Emphasis added; page 70, lines 15-16)

Based on the above, it is respectfully asserted that the application as originally filed includes ample support for the "preprocessing module" claim element.

As for the former "processing module" element of claim 114, Figure 3 of the instant application, reproduced below in conjunction with accompanying text, further shows various preprocessing modules in communication with a "process manager":



As shown, the computing modules 300 include a variety of processes, which couple to a process manager 314. The processes include an upload process 301, a filter process 302, a base line process 305, a normalization process 307, a pattern process 309, and an output process 311. Other processes can also be included. A non-exclusive explanatory list of pre-processing techniques utilized by the present invention is given in TABLE 7. (Emphasis added; page 13, lines 1-6)

In light of the above, as well as the lengthy discussion of the role of the "process manager" found throughout the specification, claim 114 has now been amended to substitute the phrase "processing manager" for "processing module".

Based at least on the above-referenced citations from the instant application as originally filed, it is respectfully asserted that independent claim 114, as amended, is now fully enabling

and supported by the written description. Continued rejection of this claim by the Examiner on these grounds is improper, and the rejections should be withdrawn.

The Examiner had also rejected pending dependent claim 120 under 35 U.S.C. §112, ¶1, based upon perceived lack of enablement and supporting description for the former claim terms "storage module", "application module", and "generation module". Claim 120 has now been amended to read as follows:

120. The system of claim 114 further comprising a model of a phenomenon, the process manager further configured to apply said model to said synchronized data to generate a descriptor of a state of a phenomenon.

Support for the amendment of claim 120 may be found in the specification as originally filed, as follows:

the system comprises a first field mounted device in communication with a process and configured to produce a first input. A process manager receives the first input and is configured to apply a first model to the first input to identify a first predicted descriptor characteristic of a state of the process. (Emphasis added; page 4, lines 16-19)

Figure 3A and accompanying text of the instant application, further describe the process manager in communication with various models. (See page 15, lines 11-16).

The Examiner also rejected pending dependent claim 121 under 35 U.S.C. §112, ¶1, based upon perceived lack of enablement and supporting description for the former claim term "model generation module". Support for this claim may be found in the application as originally filed, in text accompanying Figure 1A (reproduced above):

In the next layer 167, data received by server 166 is synchronized to permit orderly assimilation for monitoring and control purposes. In the next layer 168, the assimilated data is examined and manipulated using a variety of techniques, including statistical/numerical algorithms and tools 168, expert systems 170, and others. These processes also include model building 176 to accurately predict behavior of the process, and model monitoring 178 based upon inputs received from the plant. (Emphasis added; page 9, lines 19-24)

For claim 123 depending from claim 122, support for a module performing "neural network analysis", may be found in the application as originally filed at Table 10, and page 16, lines 10-12.

For dependent claim 124, support for a module transmitting synchronized data for interpretation may be found in the application as originally filed, at least at page 9, lines 19-22.

Dependent claim 125 recites a diagnostic module, and claim 126 depending therefrom recites a module for identifying an event. Discussion of the use of the system to identify or classify known or novel events may be found in the application as originally filed, at least at Table 11, "Coherent Based Fault Detector", and "Dynamical Invariant Anomaly Detector".

Dependent claim 127 recites a notification module. Discussion of notification of a user by the system may be found in the application as originally filed, at least at page 22, lines 29-31.

Dependent claim 128 recites a module for initiating follow-on actions, and claim 129 depending therefrom recites correction means. Discussion of use of the system to initiate follow up actions, may be found in the application as originally filed, at least at page 51, lines 10-11.

Dependent claim 130 recites specific elements of the network. Referring again to Figure 1A and the text accompanying same, the network allowing communication of the sensors may comprise a short range transceiver node ("LAN 152"), a local hub ("server 154"), and a long range transceiver hub ("web server 166"). (See page 8, line 30 - page 9, line 18)

Based upon the above amendments and remarks, it is respectfully asserted that the pending claims satisfy the requirements of 35 U.S.C. §112 ¶1. Continued rejection of the claims on these grounds is improper, and the rejections should be withdrawn.

Claim Rejections Under 35 U.S.C. §103

The Examiner has rejected all of the pending claims as obvious under 35 U.S.C. 103, based upon published PCT application no. WO/ 97/49011 to Gross et al. ("the Gross application"), in view of U.S. patent no. 5,586,066 to White et al. ("the White patent"). These rejections are traversed as follows.

As a threshold matter, the Examiner is reminded that in order to establish a prima facie case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP 2142. Here, the Examiner has explicitly acknowledged that the Gross application fails to teach the use of radiation sensors. (Office action mailed August 27, 2003, page 7, line 3).

In an attempt to provide such a teaching, the Examiner has combined the Gross application with the White patent. However, the White patent fails to describe a monitoring system featuring a radiation sensor. Specifically, the Examiner cited col. 2, lines 58-67 of the White patent as disclosing a system including a temperature sensor, equating such a sensor with a radiation sensor.

The instant application, however, specifically distinguishes radiation sensors from thermal sensors:

Thermal sensors can detect stimuli which include, but are not limited to, temperature, heat, heat flow, entropy, heat capacity, etc. Radiation sensors can detect stimuli that include, but are not limited to, gamma rays, X-rays, ultra-violet rays, visible, infrared, microwaves and radio waves. (Emphasis added; page 19, lines 22-25)

The instant application also list different types of devices eligible for use as thermal sensors and radiation sensors:

thermal sensors are suitable for use in the present invention that include, but are not limited to, thermocouples, such as a semiconducting thermocouples, noise thermometry, thermoswitches, thermistors, metal thermoresistors, semiconducting thermoresistors, thermodiodes, thermotransistors, calorimeters, thermometers, indicators, and fiber optics.

In other embodiments, various radiation sensors suitable for use in the present invention include, but are not limited to, nuclear radiation microsenors, such as scintillation counters and solid state detectors, ultra-violet, visible and near infrared radiation microsenors, such as photoconductive cells, photodiodes, phototransistors, infrared radiation microsenors, such as photoconductive IR sensors and pyroelectric sensors. (Emphasis added; page 19, line 32 - page 20, line 8)

Given (1) independent claim 114 recites a "radiation sensor", (2) the instant application specifically differentiates thermal sensors from radiation sensors, and (3) the combination of

Appl. No. 09/802,377
Amdt. dated February 25, 2004
Reply to Office Action of August 27, 2003

references relied upon by the Examiner fails to disclose the latter sensor type, it is respectfully asserted that the claims cannot be considered obvious. Continued rejection of the pending claims is therefore improper, and the claim rejections should be withdrawn.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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